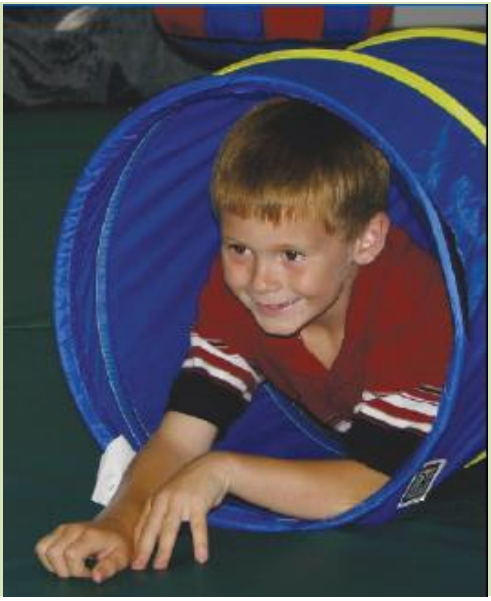
Sensory Toolbox

Alpine School District



Occupational Therapy Department

Contents

Sensory Integration Dysfunction & Sensory Processing Intervention

Compiled by: Alpine School District Occupational Therapy Department

Caution: These programs and suggested activities should only be implemented under supervision by and in consultation with a certified Occupational Therapist trained and familiar with sensory integration techniques and theory.

The following are excerpts from D. Suanders 2005 article "The Importance of Sensory Processing".

What is Sensory Integration & Processing?

1. Sensory processing refers to how the brain registers, interprets and uses information from the sensory systems. The sensory systems include sight, hearing, taste, touch smell, body awareness and balance (See Table 1).

2. Sensory input from the environment is constantly bombarding our brain through all of our senses. All sensory input except for smell is filtered by the brainstem before being sent to other areas of the brain. The sensory input is either:

    - Screened out or ignored if it is deemed to be unimportant or insignificant.
    - Noticed and then assigned relevant importance so that it is sent to the appropriate area of the brain for a response.
    - Habituated or eventually ignored if the input is constant or doesn't change much over time.

3. The brainstem is responsible for the regulation of our alertness from sleep to wakefulness. This is an important concept as we can use sensory input to change our state of alertness.

4. If an individual is unable to process and organize sensory input effectively he or she may respond negatively impacting how they perform their daily roles.

Location and Functions of the Sensory Systems

System	Location	Function
Tactile (touch) 	**Skin** – density of cell distribution varies throughout the body. Areas of greatest density include mouth, hands, and genitals.	Provides information about the environment and object qualities (touch, pressure, texture, hard, soft, sharp, dull, heat, cold, pain).
Vestibular (balance) 	**Inner ear** – stimulated by head movements and input from other senses, especially visual.	Provides information about where our body is in space, and whether or not we or our surroundings are moving. Tells about speed and direction of movement.
Proprioception (body awareness) 	**Muscles and joints** – activated by muscle contractions and movement.	Provides information about where a certain body part is and how it is moving.
Visual (sight) 	**Retina of the eye** – stimulated by light.	Provides information about objects and persons. Helps us define boundaries as we move through time and space.
Auditory (hearing) 	**Inner ear** – stimulated by air/sound waves.	Provides information about sounds in the environment (loud, soft, high, low, near, far).
Gustatory (taste) 	**Chemical receptors in the tongue** – closely entwined with the olfactory (smell) system.	Provides information about different types of taste (sweet, sour, bitter, salty, spicy).
Olfactory (smell) 	**Chemical receptors in the nasal structure** – closely associated with the gustatory system.	Provides information about different types of smell (musty, acrid, putrid, flowery, pungent).

Excerpted from : Asperger Syndrome and Sensory Issues – Brenda Smith Myles et al.

Research Shows that:

1. Touch input acts as a stimulator to developing neurons in the brain. Deep pressure touch is soothing/comforting touch that helps sooth and organizes the central nervous system for better focus and attending skills. (Light touch is alerting and tends to cause a "fight/fright/flight" reaction in some people).

2. We need to "use it or Lose it" when it comes to developing stronger neural pathways. The more we reuse the neural circuits the stronger they become.

3. Heavy work activities stimulate the proprioceptive system(body awareness) and impact serotonin level in our brain. Serotonin helps regulate brain chemicals in our brain important for memory, concentration, and for motivating us. John. J. Retay, M.D., says "exercise is like taking a little Prozac or a little Ritalin at the right moment".

Sensory Processing Difficulties:

1. Most of us take care of our sensory needs without even thinking about it and it is usually just a part of our day to day function.

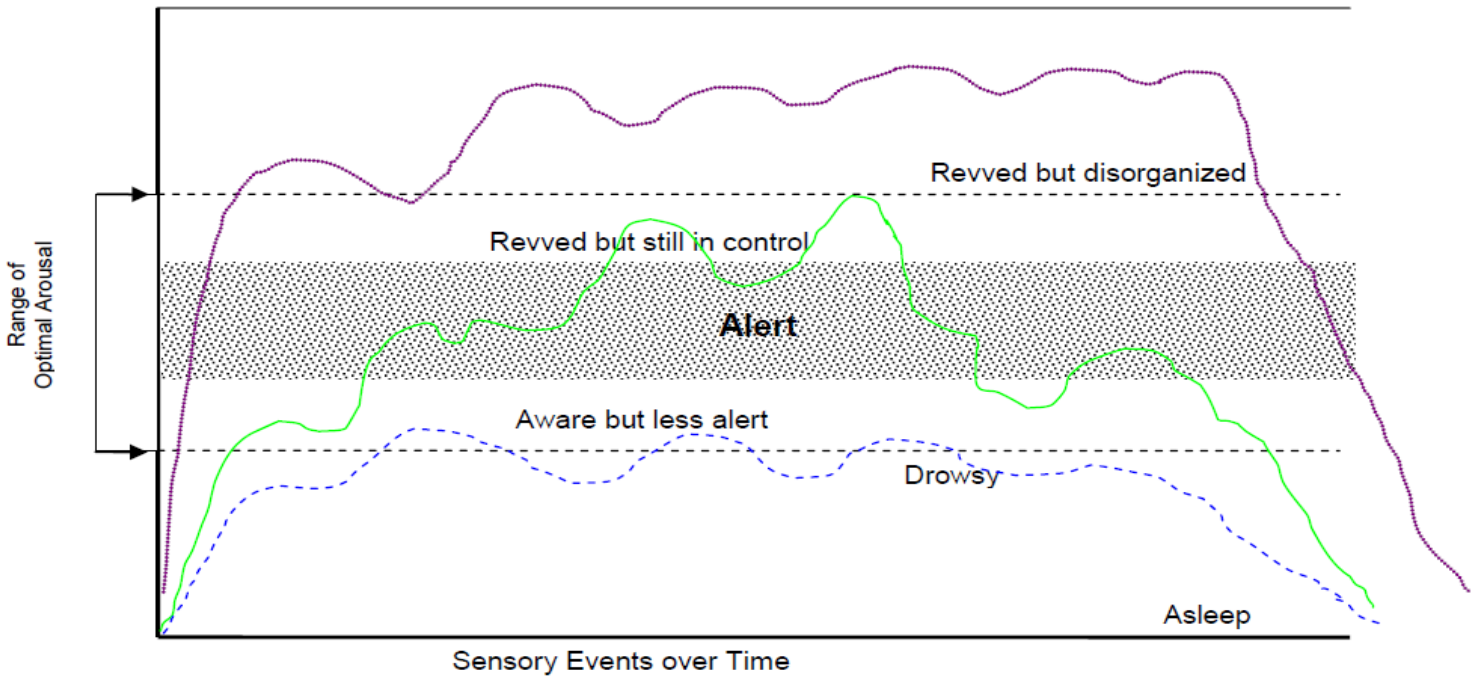
2. Sensory processing difficulties may affect anybody and they can range from mild to severe. They tend to be more common and/or more severe in those who have such conditions as autism, Tourette syndrome, Fragile X, learning disabilities, ADHD, etc.

3. Difficulties with sensory processing can impact productivity and severely restrict and limit one's enjoyment and participation in life. In children it can result in poor self esteem, avoidance behaviors, and unexplained outbursts, decreased social skills and participation in play, difficulties with daily life skills at home and school, anxiety, poor attention, poor regulation of reactions to others, and poor motor skill development.

4. Many children with sensory processing difficulties have difficulty modulating (regulating) their responses to sensory input and may not be able to maintain a clam, alert state.

What is an Optimal Alertness Zone?

For optimal function and performance of quality or adaptive responses a person needs to be at optimal alertness. Throughout the day everybody fluctuates in and out of this 'optimal alertness zone'. However, a child with sensory integration dysfunction tends to spend the majority of their day either above or below this optimal zone.



Types of Sensory Processing Difficulties:

**** These sensory processing difficulties do not necessarily occur in isolation. An individual may have a combination of these processing difficulties in response to different types of sensory input. They are described separately to illustrate the different ways that an individual may respond to sensory information.***

- The child who is a **sensory avoider** is easily over aroused but he takes action to try and keep this from happening. This child may appear to be quiet and withdrawn. He keeps an open eye on all that is happening around him and thus has difficulty concentrating or focusing for learning. He may appear to be fearful or at times uncooperative. This child needs predictability and consistency to help him cope. Calming vestibular activities and proprioception throughout his day will help him to be more relaxed and able to focus. Honour his feelings and encourage more gradual involvement in activities.

- The child who is a **sensory seeker** may always seem to be in motion. He will have difficulty attending and may be impulsive in his actions. He needs the extra sensory input to be focused and on task but can become over aroused. This child tends to take a lot of risks and may be somewhat uncoordinated and clumsy. He needs to have scheduled activities that modulate – heavy work, aerobic exercise, use of hand fidgets, keeping a water bottle with a straw on his desk.

- It doesn't take much to send the **sensory sensitive** child into over arousal. He may be said to have a low threshold for sensory input. This child has difficulty focusing and is easily distracted. He may appear to react negatively to situations and his reactions may appear to be out of context to the situation. For this child, it is important to provide sensory input that is calming and soothing. Lower the lighting, talk softly, provide pressure touch, play relaxing music and provide a safe place for this child to retreat to when he needs to lower his arousal. Consistency in routine, preteaching and preparation for change will help this child to cope better.

- The child who has **low registration of sensory input** may appear lethargic or seem to "let the world pass him by". He may need more intense and varied sensory input to achieve a just right state for learning. This child generally appears to be uninterested or to have difficulty attending. It takes a lot of input to keep this child at an optimal arousal level. Novelty will also help him to be more alert and focused. You may want to increase the intensity of sensory input that this child receives – use movement activities such as aerobic exercise to start the day, movement breaks such as walking to get a drink or deliver a note to the office, brighter lighting, highlighting of important information on the workpage, upbeat background music.

What is a Sensory Intervention Plan?

This is a plan developed to provide the optimal combination of sensations at the appropriate intensities and times for an individual child to elicit appropriate responses in their environment. A sensory intervention plan is recommended to help the child organize and process sensory input.

The goal:

To use a sensory intervention program to bring a child into this optimal zone as much as possible to facilitate optimal performance.

The challenge:

To identify strategies by which they can receive high levels of stimulation, without being disruptive, inappropriate or dangerous.

The following Toolbox was developed to help Occupational Therapists, Psychologists, teachers, parents and school staff in our school district to better identify children with sensory processing difficulties. It also targets developing more effective and coordinated intervention plans to help these children succeed in school and in life in general.

References:

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Fisher, A., Murray, E. & Bundy, A. (1991). Sensory Integration Theory and Practice. Philadelphia: F.A. Davis Company.

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Helpful Websites & Resources:

- SPD – Sensory Processing Disorder Foundation: http://www.sinetwork.org/
- The Sensory Processing Disorder Resource Center: http://www.sensory-processing-disorder.com/
- SPD-TIPS - Sensory Processing Disorder Treatment & Resources: http://www.spdbayarea.org/
- Comeunity - http://www.comeunity.com/disability/sensory_integration/resources.html
- Autism Teaching Methods: Sensory Integration Therapy: http://www.autismweb.com/sensory.htm
- Signs, Symptoms and Background Information on Sensory Integration: http://www.incrediblehorizons.com/sensory-integration.htm
- Bright Tots: http://www.brighttots.com/sensory_integration
- Families.com: http://special-needs.families.com/blog/sensory-integration-disorder-just-what-exactly-is-it